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University of Dayton Geologist Recreates 'Life on Mars' Evidence in Her Laboratory

University of Dayton

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NEWS RELEASE

UNIVERSITY OF DAYTON GEOLOGIST RECREATES 'LIFE ON MARS' EVIDENCE IN HER LABORATORY

DAYTON, Ohio — As NASA's Mars Odyssey spacecraft begins exploring the planet, particularly looking for signs of water that once could have nourished life, a University of Dayton geologist is disproving what some pointed to as scientific evidence of past life on the Red Planet.

A couple of years ago, the scientific community was rocked by evidence that pointed to possible life on Mars. A 4.5-billion-year-old Martian meteorite showed what seemed to be "a trace of biochemistry, chemical compounds from little critters decaying. Not fossils, but decomposed remnants of life," said Andrea Koziol, associate professor of geology at the University of Dayton.

In experiments in her Wohlleben Hall basement laboratory, Koziol has proved the "remnants" could have been created by natural Martian processes — lessening the credibility of the theory that Mars once hosted life.

Koziol will present "A Non-Biological Origin for the Nanophase Magnetite Grains in ALH001: Experimental Results" at 8:30 a.m. (CST) Friday, March 15, at the 33rd annual Lunar and Planetary Science Conference to be held March 11-15 at the South Shore Harbour Resort and Conference Center in League City, Texas.

Scientists began examining the ALH001 meteorite — about the size of a large potato — in 1995 and found carbonates the size of pencil points. "On Mars and other planets, carbonates are pretty unusual," Koziol said. "Geologists see carbonates and think water, not common in the universe. That original group saw possibilities of former life, single-cell bacteria that left the carbonates and magnetite grains behind when they decayed."

The theory matched the results of natural processes on Earth, where decaying bacteria leave behind an intact crystal lattice of iron and oxygen atoms from the magnetite. Some scientists argued that only biology could arrange the atoms in such precise lines.

Koziol did it with heat.

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"I had worked on similar carbonates before, and I thought a natural process could have this result," she said. Her co-author for the presentation, Adrian Brearley, had proposed the possibility, and Koziol proved it.

She concocted synthetic rock that would mimic the real meteorite, heated it to 400 degrees Fahrenheit for five minutes and then immersed it in water to cool it down. Under heat and pressure, the carbonate synthetic rock showed magnetite and carbon dioxide "which just dribbles out of the rock and it's gone," Koziol said. "We got the same size, same shape, same beveled edges and same lined-up atoms" as appear in the meteorite, she said.

A naturally occurring collision on the ancient surface of Mars could have provided the heat and pressure she recreated in her lab, Koziol said.

She notes that many scientists attending the conference were doubtful of the meteorite's evidence to begin with. "A lot of other people out there argued against life on Mars from the beginning," she said. "This proves another method could be responsible."

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For media interviews, contact **Andrea Koziol** at UD at (937) 229-2954 or via e-mail at andrea.koziol@notes.udayton.edu. She will be at the conference from Sunday, March 10, through Friday, March 15, and can be reached through the hotel at (800) 442-5005 or (281) 334-1000. Please note that there is a small chance Koziol will not attend the conference if she and her husband get word of a conflicting court date in Poland, where they are adopting three siblings.